Air Quality Permitting
Statement of Basis

February 16, 2005

Permit to Construct No. P-040520

Busch Agricultural Resources, Inc., Idaho Falls

Facility ID No. 019-00025

Prepared by:

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AIR QUALITY DIVISION

FINAL PERMIT

Table of Contents

Acronyms, Units, and Chemical Nomenclatures

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
Btu	British thermal unit
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
gr/dscf	grain (1 lb = 7,000 grains) per dry standard cubic foot
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
m	meter(s)
MACT	Maximum Achievable Control Technology
MMBtu/hr	million British thermal units per hour
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOX	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM_{10}	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SO_2	sulfur dioxide
T/yr	tons per year
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

The Busch Agricultural Resources facility produces barley malt from barley grains. The grains handling area includes equipment for loading and unloading grain, malt and by-product materials, equipment for cleaning grain and malt, and equipment for conveying and storing grains and malt. All grains handling at the facility uses baghouses to control PM emissions. The baghouse control systems are identified as System 100 through System 800. Malt production uses four indirect-fired natural-gas kilns to dry the green malt. Utility operations include three natural-gas-fired boilers. The boilers provide steam for the malting process equipment.

3. FACILITY / AREA CLASSIFICATION

Busch Agricultural Resources, Inc., is defined as a major facility because the potential to emit for NO_x exceeds 100 tons per year. The AIRS classification is "A" because the potential to emit of NO_x is over the major source threshold.

The facility is located within AQCR 61 and UTM zone 12. The facility is located in Bonneville County which is designated as unclassifiable for all criteria pollutants (PM_{10}, CO, NO_x, SO_2, lead, and ozone).

The AIRS information provided in Appendix C defines the classification for each regulated air pollutant at Busch Agricultural Resources, Inc. This required information is entered into the EPA AIRs database.

4. APPLICATION SCOPE

Busch Agricultural Resources, Inc., has submitted an application to modify PTC No. P-030539 as follows:

- Install a dust system (System 800), which includes a baghouse, for:
  - handling of barley at the germination towers and Kiln 3
  - handling of malt from Kiln 3 to the headhouse
  - transfer of barley from the daybin elevator to the barely daybin at the germination towers
  - transfer of barley from the barley daybin to the barley washer via screw conveyor
  - transfer of malt from Kiln 3 to the malt leg transfer conveyor via the kiln unloading drag conveyor
  - transfer of malt from Kiln 3 malt leg transfer conveyor to the kiln malt daybin
  - Transfer out of the daybin to the headhouse return conveyor
- Install a vacuum system, which is controlled by a baghouse, in the Kiln 3 (east and west) building, which will include areas around the daybins and the bridge.
- Increase particulate (PM and PM_{10}) emission limits for the two previously-permitted vacuum systems at the facility.
- Change boiler natural gas throughput monitoring to monthly instead of daily.

4.1 Application Chronology

8/4/04	Application received
9/3/04	Application declared complete
10/27/04	E-mail from Busch Agricultural Resources requesting monthly monitoring for natural gas throughput for boilers
11/2/04	Facility draft permit issued
11/23/04	Comments received from facility
12/13/04	PTC processing fee received

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

System 800 Baghouse

Reference number: DS8
Type: Fabric filter
Manufacturer: Donaldson
Model number: 72RFW 10 AW
Percent control efficiency, PM_{10}: 99.5

Kiln 3 (East and West) Vacuum System

Reference number: K3VAC
Type: Fabric filter
Manufacturer: MAC
Model number: 96AVR14-STY3
Percent control efficiency, PM_{10}: 99.9

5.2 Emissions Inventory

Appendix A is a copy of Table 5.2 of the permit application, which documents that the calculated emissions from the Dust System 800 (DS8) are 0.32 lb/hr and 1.4 T/yr of PM. This calculation was done using the maximum hourly throughput rates and AP-42 factors for headhouse and grain handling from Table 9.9.1-1, dated March 2003. The AP-42 PM_{10} fraction is about half of the total PM, although for modeling purposes, PM_{10} is estimated at the higher PM level.

Although the PM and PM_{10} emissions were estimated at 0.32 lb/hr, the facility has requested that the PM and PM_{10} emission limits be based on the NSPS regulatory limit of 0.01 gr/dscf instead. Also, although the actual emissions from S11 and S12 are not estimated to increase, the facility has requested that the PM and PM_{10} emissions limits for these sources be increased to correspond to the NSPS limit of 0.01 gr/dscf. Permit Condition 4.3 requires that PM emissions from the baghouse stacks shall not exceed 0.01 gr/dscf.

In order to show compliance with the PM_{10} NAAQS using modeling, the pounds per hour (converted to grams per second) must be used, not a concentration (gr/dscf). If the concentration is the limiting factor, then a worst-case equivalent pounds per hour must be determined to use for modeling for determination of compliance with NAAQS. The facility proposed using the actual cubic feet per minute (acfm) from the baghouse as a worst-case estimate. Multiplying acfm by the limit of 0.01 gr/dscf to obtain (with conversion) the pounds per hour emission rate is worst case because the calculation assumes 0% moisture, standard temperature, and standard pressure. With moisture content greater than 0%, the amount of particulate allowed in order to comply with the 0.01 gr/dscf would be lower than the amount allowed if the actual exit air had 0% moisture (at standard temperature and pressure).

The pound per hour emission estimate modeled is conservative, but that emission rate cannot be easily verified in the manner that it was estimated, as that calculation method depends on temperature, pressure, and moisture content of the exit air stream. The AP-42 estimation method has been used to show that the estimated emissions do not exceed the worst-case calculated emissions derived from the NSPS regulatory limit exit air concentration. The barley throughput is limited for the unloading operations and tracking is required.

The maximum potential PM_{10} is limited by the NSPS limit of 0.01 gr/dscf for PM. If this limit is not exceeded, the emissions estimates and the air dispersion modeling analysis demonstrate that the NAAQS for PM_{10} will not be exceeded.

The three vacuum systems' PM_{10} emissions were modeled at the rate that corresponds to 0.01 gr/dscf. The throughput of the vacuum systems is difficult to estimate due to the nature of the operation. A vacuum system is used for applications such as cleaning up occasional spills of grain. The Kiln 3 (east and west) vacuum system throughput was estimated at two tons per year. Using the AP-42 factor of 0.061 lbs/ton, the estimated emissions to the vacuum system is 0.122 lbs/year, not including any control efficiency for the vacuum system baghouse filter. The emission rate that was modeled is 0.09 lbs/hr. Because the estimated emissions are negligible, and the modeling at a much higher rate showed compliance with the NAAQS, no monitoring or recordkeeping is required for the new Kiln 3 (east and west) vacuum system.

Tables 5.1 and 5.2 show the previous permit limits for DS8, the Kiln 3 vacuum system, S11, and S12, the estimated emissions based on throughput and AP-42 emission factors, and the emissions limit that corresponds to the NSPS PM limit of 0.01 gr/dscf (see earlier discussion of derivation). The allowable emissions shown in the tables were used in the air dispersion model to demonstrate compliance with the NAAQS. The AP-42 estimated emissions are less than the allowable emissions. The allowable emissions are limited in the permit by the corresponding 0.01 gr/dscf NSPS limit. Therefore, no pound-per-hour or ton-per-year limits are required.

Table 5.1 EMISSION INVENTORY

Source	PM[a]		PM_{10}[b]	
	(lb/hr)[c]	(T/yr)[d]	(lb/hr)[c]	(T/yr)[d]
System 800 Baghouse	0.6	2.63	0.6	2.63
Kiln 3 (East and West) Vacuum System	0.09	0.39	0.09	0.39
S11 headhouse vacuum	0.086	0.39	0.086	0.39
S12 kiln vacuum	0.086	0.39	0.086	0.39
Total:	**0.862**	**3.8**	**0.862**	**3.8**

a) Particulate Matter
b) Particulate Matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
c) Pounds per hour
d) Tons per year

5.3 Modeling

The atmospheric dispersion modeling analysis that was done for the modification demonstrated, in the permit application, that the National Ambient Air Quality Standards (NAAQS) would not be exceeded for any criteria pollutant. DEQ has evaluated the modeling and determined that Busch Agricultural Resources has demonstrated, to the Department's satisfaction, compliance with all applicable standards for the issuance of a PTC permit. The DEQ atmospheric dispersion modeling review memorandum is included in Appendix B.

The emission rates used to show compliance with the NAAQS are greater than the emission rates calculated from the estimated throughput (see Section 5.2 of this statement of basis). The maximum hourly throughput was modeled for 24 hours per day. Therefore, no daily tracking is required.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 ..... Permit to Construct Required

An increase in permitted emissions of PM_{10} is requested. A modification of the existing permit to construct is required in order to modify the permit limits.

IDAPA 58.01.01.203.02 ..... Permit Requirements for New and Modified Stationary Sources, NAAQS

No permit to construct shall be granted for a new or modified stationary source unless the applicant shows to the satisfaction of the Department all of the following: (break in section) The stationary source or modification would not cause or significantly contribute to a violation of any ambient air quality standard.

The emissions limits for S11 and S12 in Permit Condition 4.3 have been removed. These limits are not required because the permit application demonstrated compliance with the NAAQS for PM_{10} based on the PM limit in Permit Condition 4.3 of 0.01 gr/dscf. No lb/hr or T/yr limits were set for the System 800 dust control system or for the Kiln 3 (east and west) vacuum system for the same reasons. See Sections 5.2 and 5.3 of this statement of basis for further details.

40 CFR 60 ..... New Source Performance Standards

Subpart DD Standards of Performance for Grain Elevators

(a) The provisions of this subpart apply to each affected facility at any grain terminal elevator or any grain storage elevator, except as provided under § 60.304(b). The affected facilities are each truck unloading station, truck loading station, barge and ship unloading station, barge and ship loading station, railcar loading station, railcar unloading station, grain dryer, and all grain handling operations.

§ 60.304(b) lists types of modifications that are exempt.

The regulation has been determined by a previous permit action to be applicable to this facility.

The requirements in this section have been addressed in a previous permit analysis.

The Environmental Protection Agency (EPA) contacted DEQ regarding determining if malted barley is considered a grain for purposes of this NSPS. EPA stated that they do not want DEQ to make this determination and that if the facility wanted EPA to make the determination, they would have to petition EPA to do so. The facility has been informed of EPA's request and understands that EPA Region X must make the determination whether or not malted barley is considered grain for the Idaho Falls facility.

Subpart Dc ..... Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

(a) Except as provided in paragraph (d) of this section, the affected facility to which this subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million Btu per hour (Btu/hr)) or less, but greater than or equal to 2.9 MW (10 million Btu/hr).

Boilers No. 1, 2, and 3 are rated at 30 MMBtu/hr each. This is between 10 and 100 MMBtu/hr. Therefore, Subpart Dc is applicable to the boilers.

The permit requires monitoring and recordkeeping as specified in 40 CFR 60.48.c(g) or an approved alternative method. Busch Agricultural Resources plans to make a request to EPA to authorize an alternative method of fuel monitoring for the boilers. EPA normally grants approval for this type of request. Therefore, the monitoring requirement was worded so that this EPA authorization, if granted, can be used without a PTC modification. In addition, the facility is required to monitor and record the amount of gas used every month and for the most recent 12-month period to show compliance with the annual gas limit.

The recordkeeping requirement is as follows: *(g) The owner or operator of each affected facility shall record and maintain records of the amounts of each fuel combusted during each day.*

The permit requires tracking of the natural gas used for the boiler as required by 40 CFR 60.48.c (g) or an approved alternative method.

In addition, Busch Agricultural Resources plans to request that EPA approve an alternate natural gas monitoring strategy such that the natural gas meter that monitors throughput for all three boilers can be used to satisfy the NSPS requirement to monitor throughput for each boiler. This is normally done by proposing a monitoring allocation approach, such as allocating fuel usage by boiler Btu ratings.

5.5 Fee Review

The modifications that cause the Busch Agricultural Resources facility to be a major facility as defined in IDAPA 58.01.01.008.10 have recently been completed, so the facility is subject to registration and registration fees in accordance with IDAPA 58.01.01.387. The facility is subject to PTC processing fee in accordance with IDAPA 58.01.01.225. The fee is based on the increase in allowable emissions. The previous annual permit limit has been removed, so the remaining PM limit of 0.01 gr/dscf is used to calculate the potential to emit of PM and PM_{10}. The difference between the previous limit and the current potential to emit is 3.8 tons per year. This calculated increase is between 1 and 10 tons per year, so the PTC processing fee is $2,500, which was received on December 13, 2004. The facility is current on registration fees. The PTC application fee of $1,000 was received on August 4, 2004.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	**Annual Emissions Increase (T/yr)**	**Annual Emissions Reduction (T/yr)**	**Annual Emissions Change (T/yr)**
NO_X	0.0	0	0.0
SO_2	0.0	0	0.0
CO	0.0	0	0.0
PM_{10}	3.8	0	3.8
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0	0.0
Total:	0.0	0	3.8
Fee Due	$ 2,500.00		

6. PERMIT CONDITIONS

Permit Condition 2.5.1 was changed to limit natural gas in million standard cubic feet rather than million cubic feet.

Permit Conditions 4.1.7 and 4.2.8 were changed to include the System 800 particulate emission control system.

The former Permit Condition 4.1.7 was changed to 4.1.8 and re-written to include the new vacuum system.

The former Permit Condition 4.2.8 was changed to 4.2.9 and re-written to include the new vacuum system.

Permit Condition 4.3 was reworded as follows:

Previous Permit Condition 4.3 (first line):

In accordance with 40 CFR 60 Subpart DD, the PM emissions from the baghouse stacks shall not exceed 0.01 gr/dscf.

Revised Permit Condition 4.3 (first line):

In accordance with 40 CFR 60 Subpart DD, the PM emissions from the truck unloading station, truck loading station, railcar loading station, railcar unloading station and all grain handling operations as defined by 40 CFR 60.301 shall not exceed 0.01 gr/dscf.

Permit Condition 4.9.1 now references the applicable regulation, 40 CFR 60.14.

Permit Condition 4.9.2 was modified for clarity.

Permit Conditions 4.3, 4.4, 4.5, 4.9.2, and 4.11 have been revised to eliminate the references to malt as it pertains to Part 60.

7. PUBLIC COMMENT

The facility was issued a draft permit on November 2, 2004. Comments were received by conference call during a permit handoff meeting on November 23, 2004. The comment that required a change to the permit was incorporated by changing the natural gas limit for the kilns to have units of standard cubic feet rather than the implied actual cubic feet.

An opportunity for public comment period on the PTC application was provided, in accordance with IDAPA 58.01.01.209.01.c., from September 9, 2004 to October 11, 2004. During this time, there were no comments on the application and no requests for a public comment period on DEQ's proposed action.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that Busch Agricultural Resources be issued PTC No. 040520 for the installation of the System 800 dust control system and the Kiln 3 (east and west) vacuum system. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

CZ/sd Permit No. P-040520

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APPENDIX A

TABLE 5.2 OF THE PTC APPLICATION

EMISSION ESTIMATES FOR DS8

Table 5-2
Busch Agricultural Resouces, Inc.
Idaho Falls Malt Plant Dust System 800 and Kiln 3 Vacuum Application
Subpart DD Compliance Calculations

Emission Unit #	Source Name	Description	Max Hourly Rate	Hourly Rate Units	Capture Efficiency	Control Efficiency	PM Emissions Factor	Emission Factor Units	Max. Emission Rates (lbs./hour)	Exit Gas Volume (acfm)	Emission Rate (lbs/hr) using 0.01 gr/dscf*	Emission Rate (lbs/hr) using 0.1 gr/dscf**
DS8	Dust System 800	Barley Elevator to Daybin	121	tons	100%	99.5%	0.061	lbs/ton	0.04	7,000	0.60	6.00
		Barley Daybin to Washer	221	tons	100%	99.5%	0.061	lbs/ton	0.07			
		Malt Kiln to Leg Transfer	189	tons	100%	99.5%	0.061	lbs/ton	0.06			
		Malt Kiln Leg	189	tons	100%	99.5%	0.061	lbs/ton	0.06			
		Malt Daybin	189	tons	100%	99.5%	0.061	lbs/ton	0.06			
		Malt Daybin Unloading	126	tons	100%	99.5%	0.061	lbs/ton	0.04			
								Maximum Total Emission Rate for DS8	0.32			

* 0.01 gr/dscf is a USEPA 40 CFR 60 Subpart DD standard for grain elevators.
** 0.1 gr/dscf is a Idaho state particulate matter emission standard

APPENDIX B

AIR DISPERSION MODELING

TECHNICAL MEMORANDUM

MEMORANDUM

TO: Carole Zundel, Air Quality Division

FROM: Mary Anderson, Air Quality Division

SUBJECT: Atmospheric Dispersion Modeling Review for the Busch Agricultural Resources, Inc., Idaho Falls, Idaho, Permit to Construct Application

DATE: December 23, 2004

Busch Agricultural Resources, Inc. submitted a permit to construct (PTC) application for their Malt Plant in Idaho Falls, Idaho. I performed a cursory review of the application material. The consultant used the current version of ISCST3 to estimate the ambient concentrations of PM_{10}. After reviewing the application material, I have determined that Bush Agricultural Resources, Inc. has demonstrated, to the Department's satisfaction, compliance with all applicable standards for the issuance of a PTC permit.

Table 1 presents the modeling assumptions and parameters used by the applicant. Table 1 also includes DEQ's review and determination of those assumptions and parameters.

Table 4. MODELING PARAMETERS.

Parameter	What Facility Submitted	DEQ's Review/Determination
Modeling protocol	A modeling protocol was not submitted for prior approval	N/A
Model Selection	ISCST3	This is appropriate and correct version was used.
Meteorological Data	Pocatello, ID surface data, Salt Lake City upper air data, 1987 - 1991	Appropriate
Model Options	Regulatory defaults used	Appropriate
Land Use	Rural land use	Appropriate
Complex Terrain	Complex terrain is present and included in the model,	Appropriate
Building Downwash	Downwash was included	Appropriate
Receptor Network	50 meter along ambient air boundary 100 meter out to 2,600 meters 200 meters out to 4,000 meters 500 meters out to 10,000 meters 1000 meters out to 30,000 meters	This is sufficient to adequately address the maximum design concentration
Facility Layout	N/A	The facility layout used in the model was verified by using the scaled plot plan submitted by the applicant

The facility did not perform a preliminary impact analysis; instead they performed the full impact analysis which included all sources at the facility. The following emission sources at the facility were included in the full impact modeling analysis:

- Kiln No. 1
- Kiln No. 2
- Kiln No. 3 West
- Kiln No. 3 East (Formerly identified as Kiln No. 4)
- Kiln No. 3 (east and west) preheaters and burners (6 total)
- Grain Handling Dust System No. 1 (S01)
- Grain Handling Dust System No. 2 (S02)
- Grain Handling Dust System No. 3 (S03)
- Grain Handling Dust System No. 4 (S04)
- Grain Handling Dust System No. 5 (S05)
- Grain Handling Dust System No. 6 (S06)
- Grain Handling Dust System No. 7 (S07)
- Grain Handling Dust System No. 8 (DS8)
- Boilers
- Head House Vacuum
- Kiln (1&2) Vacuum
- Kiln 3 Vacuum (K3VAC)
- Barley Unloading

The emission rates used in the modeling analysis are included in Tables 6-2 and 6-3 of the August 2, 2004 submittal of the facility. They are not repeated here. Table 2 presents the results for this modeling analysis.

Table 2. Modeling results.

Pollutant	Averaging Period	Predicted Ambient Impact ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)[a]	Total Ambient Concentration ($\mu g/m^3$)	Regulatory Limit ($\mu g/m^3$)	Percent of Standard
PM_{10}	Annual	5.9	26	31.9	50[b]	64
	24-hour	64.3	73	137.3	150[b]	92

a. Micrograms per cubic Meter
b. National ambient air quality standards (IDAPA 58.01.01.577)

APPENDIX C

AIRS FORM

AIRS/AFS[a] FACILITY-WIDE CLASSIFICATION[b] DATA ENTRY FORM

Facility Name: Busch Agricultural Resources, Inc.
Facility Location: Idaho Falls
AIRS Number: 019-00025

AIR PROGRAM / POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO_2	B							U
NO_x	A						A	U
CO	B							U
PM_{10}	B							U
PT (Particulate)	B		DD					U
VOC	B							U
THAP (Total HAPs)	B							
			APPLICABLE SUBPART					
			DD					

[a] Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

[b] AIRS/AFS Classification Codes:

A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.

SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.

B = Actual and potential emissions below all applicable major source thresholds.

C = Class is unknown.

ND = Major source thresholds are not defined (e.g., radionuclides).